

KNI-145-A

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: H. ENDO et al.
Serial No.: Unknown
Filed: Concurrently herewith
Group Art Unit: Unknown
Examiner: Unknown
Title: METHOD FOR FORMING COATING FILM

PRELIMINARY AMENDMENT-A

Box Patent Applications
Assistant Commissioner for Patents
Washington, DC 20231

Sir:

In connection with the subject patent application (filed concurrently herewith),
please amend the application as follows.

IN THE TITLE:

After "FILM" insert --ON A PLATE-LIKE WORKPIECE--.

IN THE SPECIFICATION:

Page 1, line 6, change "PRIOR" to --RELEVANT--.

Page 3, line 13, after "atmosphere" insert --surrounding the plate-like material--;

line 15, change "be" (first occurrence only) to --a temperature--;

line 20, after "purging" insert --with--;

line 24, change "come" to --be moved--.

Page 4, line 9, change "an" (second occurrence only) to --baking furnace--;

line 10, before "DESCRIPTION" insert --DETAILED--;

line 15, after "W" insert --. As shown, the elevator means 3 extends--;

line 19, change "taking" to --moving--;

line 20, delete "and" (first occurrence only);

line 21, before "within" insert --from--.

Page 5, line 3, change "the" (first occurrence only) to --an--;

line 6, after "evaporated" insert --from the coated liquid--;

line 19, change "it" to --the carbon content--;

line 20, change "therefore being" to --which is--.

Page 7, line 24, delete "to be".

Page 9, line 5, after "in" insert --quantities of--; change "times mol" to --mols--;

line 10, change "the" to --an--;

line 11, before "superiority" insert --resulting--;

line 12, change "anti-crack" to --anti-cracking--.

Page 10, line 11, change "enabling to prevent" to --preventing--; after "spots" insert --will occur,--;

line 21, after "in" insert --quantities of--; change "times mol" to --mols--.

Page 11, line 9, change "crack" to --cracking--;

line 12, change "should not be" to --is not--;

Page 12, line 11, change "upside" to --upper part of the apparatus--;

line 12, change "downside" to --lower part of the apparatus, vertically

spaced from the hot plate--;

line 14, after "material" insert --coating liquid--;

line 15, after "treated" insert --W--.

after line 21, insert the following paragraph

--Although there have been described in detail what are the present embodiments of the invention, it will be understood by persons skilled in the art that variations and modifications may be made thereto without departing from the gist, spirit or essence of the invention. The scope of the invention is indicated by the appended claims.--.

IN THE CLAIMS:

Please amend the claims as follows.

1 1. (amended) A method for forming a coating film, comprising the [following]
2 steps of:

3 applying a raw material of a low dielectric constant onto a surface of a plate-like
4 material to be treated [such as a semiconductor wafer and a glass substrate];

5 reducing [the] oxygen concentration in the atmosphere surrounding the plate-
6 like material to be less than or equal to 1% before [the] a surface temperature of said
7 plate-like material to be treated rises to 200°C; thereafter

8 heating said plate-like material to be treated to [be] a temperature greater than
9 or equal to 400°C; and then

10 maintaining the oxygen content in the atmosphere to be less than or equal to

11 1% until the surface temperature of said plate-like material to be treated lowers to
12 200°C.

Claim 2, line 2, after "purging" insert --with--.

1 3. (amended) A method for forming a coating film as defined in claim 1, wherein
2 said method is conducted in one baking furnace, [in the upper portion of which is
3 positioned a hot plate, while in the lower portion of which is positioned a cool plate,
4 in which said plate-like material to be treated comes close to either one of said hot
5 plate and said cool plate selectively by means of an elevator means] the baking
6 furnace including a hot plate and a cool plate vertically spaced from each other, and
7 elevator means for selectively moving the plate-like material to be treated relative to
8 the hot and cool plates, to thereby control the surface temperature of the plate-like
9 material.

1 4. (Amended) A method for forming a coating film as defined in [any one of
2 claims] claim 1 [through 3], wherein said method [is applied to a] involves forming of
3 an interlayer insulation film by a damascene method.

Please add the following new claims.

1 5. (new) A method for forming a coating film as defined in claim 2, wherein said
2 method involves forming of an interlayer insulation film by a damascene method.

1 6. (new) A method for forming a coating film as defined in claim 3, wherein said
2 method involves forming of an interlayer insulation film by a damascene method.

1 7. (new) A method for forming a coating film as defined in claim 3, wherein said

hot plate is disposed above said cool plate.

8. (new) A method for forming a coating film as defined in claim 3, wherein said elevating means extends through said cool plate.

9. (new) A method for forming a coating film as defined in claim 1, wherein said raw material is one of an inorganic SOG and an organic SOG.

10. (new) A method for forming a coating film as defined in claim 4, wherein said interlayer insulation film has a dielectric constant of ≤ 3.5 .

11. (new) A method for forming a coating film as defined in claim 5, wherein said interlayer insulation film has a dielectric constant of ≤ 3.5 .

12. (new) A method for forming a coating film as defined in claim 6, wherein said interlayer insulation film has a dielectric constant of ≤ 3.5 .

IN THE ABSTRACT:

Line 2, change "The present invention aims at maintaining a low dielectric constant in a case" to --A method--;

Line 3, after "film" insert --on a plate-like workpiece--; after "SOG" insert --so as to maintain a low dielectric constant, involves the following steps--;

Lines 3-6, change the sentence "When a plate-like material ... is introduced into the apparatus." to --Placing the workpiece, which has an applying film formed on its surface, into a baking furnace.--;

Line 6, before "the oxygen" insert --reducing--;

Line 7, change "atmosphere is reduced" to --furnace--; change "less than or

equal to" to -- \leq --;

Line 9, change "to be less than or equal to" to --at \leq --;

Lines 9-11, delete "elevator means ... hot plate 1, and the"

Line 11, change "plate-like material to be treated W" to --workpiece--;

Lines 11-12, change "greater than or equal to" to -- \geq --;

Lines 12-13, change "After such a In this instance" to --Finally--;

Line 13, change "atmosphere" to --furnace--;

Lines 14-15, change "plate-like material to be treated W lowers" to --workpiece is lowered--.

REMARKS

Upon entry of the present Preliminary Amendment-A the claims in the application are claims 1-12, of which claim 1 is independent.

The specification, claims and abstract have been amended to overcome minor informalities therein, to generally have more idiomatic form, to eliminate all multiple dependencies in the claims, and to present new claims 5-12. Applicant respectfully submits that the amendments are fully supported by the original application.

Customer No. 21828
Carrier, Blackman & Associates, P.C.
24101 Novi Road, Suite 100
Novi, Michigan 48375
January 23, 2001

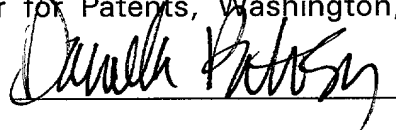
Respectfully submitted,



William D. Blackman
Attorney for Applicant
Registration No. 32,397
(248) 344-4422

CERTIFICATE OF MAILING

I hereby certify that this correspondence is being deposited with the U.S. Postal Service as Express Mail Certificate No. EL699973227US in an envelope addressed to Box Patent Applications, Assistant Commissioner for Patents, Washington, D.C. 20231 on January 23, 2001.

A handwritten signature in dark ink, appearing to read "Daniel R. Kohn", is written over a horizontal line.

JPC/ms